

REMARKS

Claims 1, 3, 5-7, 9, 10, 12, 14 and 15 have been amended to recite that the adhesive is a waterborne adhesive and to require use of an alkenyl succinic anhydride component. Claim 2 has been canceled. Claims 16-20 have been newly added. Support may be found, e.g., at page 3, line 3, and page 4, lines 1-2, of applicants' specification. No new matter has been added. Entry is requested.

Claims 1-15 are rejected under 35 U.S.C § 112, first paragraph, as containing subject matter which is not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Specifically, the examiner urges that the recitation of "an organic anhydride" and "an amount effective to improve the set speed of the adhesive" are so broad as to be incomprehensible.

As amended, the claims require use of an alkenyl succinic anhydride. It is well within the skill of the art to determine, by addition of varying amounts of the required component whether the amount is sufficient to improve the set speed of the adhesive to which the component has been added. Such limited experimentation is not undue and would not prevent the skilled artisan from successfully practicing the claimed invention.

Claims 1-15 are rejected under 35 U.S.C § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the examiner urges that claims 1 and 9 are indefinite since the adhesive is not specifically defined and because it is unclear whether the organic anhydride is added to or is already present in the adhesive.

The claims have been amended to recite that the adhesive is a waterborne adhesive. The adhesive, when applied to the substrates(s) to be bonded, contains the alkenyl succinic anhydride component. It does not matter whether the component is added during the manufacture of the adhesive formulation, or if it is added to an existing formulation (e.g., by the converter) to improve the set speed of that adhesive.

Claims 1-5, 7, 9-13 and 15 are rejected under 35 U.S.C § 102 (b) as being anticipated by Nguyen et al. (U.S. Patent No. 5,716,441). Nguyen is cited as teaching an adhesive composition comprising a starch modified by 3% by weight of octenyl succinic anhydride and a crosslinking agent, and used in various applications such as paper bonding and case and carton. The examiner acknowledges that Nguyen is silent with respect to improving set speed, but urges the composition would inherently have the same properties as those claimed.

Nguyen discloses starch-based adhesives. The starch used in the practice of the Nguyen is a hydrophobically modified fluidity corn starch prepared by reacting a base corn starch that has been converted to a water fluidity of from about 60 to about 80 with an organic acid anhydride reagent, such as octenyl succinic anhydride. This document fails to disclose or even suggest the use of OSA alone, or as part of a crosslinked carrier starch, as a component of a waterborne adhesive, which component improves the set speed of the adhesive.

Claims 1-5, 7, 9-13 and 15 are rejected under 35 U.S.C § 102 e) as being anticipated by Lydzinski et al. (U.S. Patent No. 6,280,515). Claims 6, 8 and 14 are rejected under 35 U.S.C § 103 (a) as being unpatentable over Lydzinski et al. (U.S. Patent No. 6,280,515) as applied to claims 1 and 3. Lydzinski is cited as teaching an adhesive composition comprising a

polysaccharide, such as a crosslinked starch modified with 3% by weight of an organic anhydride such as octenyl succinic anhydride, polyvinyl alcohol, a crosslinking agent such as calcium chloride, and used in various applications such as paper laminating wood bonding and tissue and towel manufacture. The examiner acknowledges that Lydzinski is silent with respect to improving set speed, but urges the composition would inherently have the same properties as those claimed. With respect to the Section 103 rejection of claims 6, 8 and 14, Lydzinski is cited as teaching an adhesive composition comprising polyvinyl alcohol and as further teaching compositions comprising ethylene vinyl acetate in the prior art (the examiner referring to col. 1, lines 23-29). The examiner urges that it would have been obvious to incorporate ethylene vinyl acetate into the composition of Lydzinski since the prior art teaches that use of ethylene vinyl acetate would enhance stability of the adhesive.

Lydzinski discloses foamable adhesives comprising a polysaccharide modified with, for example OSA and water. The modified polysaccharide facilitates foaming. This document fails to disclose or even suggest the use of OSA alone, or as part of a crosslinked carrier starch, as a component of a waterborne adhesive, in an amount needed to improve the set speed of the adhesive. The disclosure at col. 1, lines 23-29, acknowledging that foamed EVA-based adhesives are known in the art, in view of the teachings of Lydzinski, would not suggest addition of EVA to the adhesive polysaccharide adhesives of Lydzinski and certainly would not suggest addition of OSA or an OSA-modified starch as a component in an to an EVA-based adhesive.

Claims 1-5, 7, 9-13 and 15 are rejected under 35 U.S.C § 102 (e) as being anticipated by Eden et al. (U.S. Patent No. 6,379,447). Eden is cited as teaching an adhesive composition

comprising crosslinked starch modified by 5% by weight of octenyl succinic anhydride and a crosslinking agent (the examiner referring to col. 8, lines 47-52 and to claims 1, 6 and 7), and used in various applications such as paper laminating. The examiner acknowledges that Eden is silent with respect to improving set speed, but urges the composition would inherently have the same properties as those claimed.

Eden discloses polysaccharide adhesives comprising 15 to 50 wt % of a polysaccharide material (e.g., starch, dextrans and blends thereof) and having specific characteristics (e.g., zero-shear viscosities and shear thinning index) as a continuous aqueous phase and, if desired, in addition to the aforementioned continuous aqueous phase, an insoluble polysaccharide particulate phase. The particulate phase may be a crosslinked starch, thermally treated starch or a gum. The disclosure noted by the examiner at col. 7, relates to the use of 5 parts of a waxy OSA treated enzyme converted multidextrin as a component of the continuous phase in a composition that did not have the required characteristics and did not perform well. This disclosure fails to teach or even suggest the adhesive composition claimed by applicants and furthermore, provides no disclosure that would motivate the skilled artisan to use an alkenyl succinic anhydride component, let alone in amounts needed to improve set speed.

Claims 1-15 are rejected under 35 U.S.C § 102 (e) as being anticipated by Figiel et al. (U.S. Patent No. 6,387,475). Figiel is cited as teaching an adhesive composition comprising crosslinked starch modified by 3% by weight of octenyl succinic anhydride, ethylene vinyl acetate, polyvinyl alcohol, crosslinking agent such as polyvalent salt activator, and used in various applications such as making coreless paper rolls. The examiner acknowledges that Figiel

is silent with respect to improving set speed, but urges the composition would inherently have the same properties as those claimed.

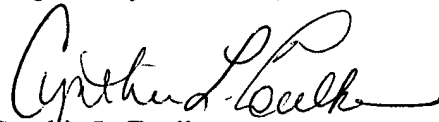
Figiel discloses use of a dicarboxylic acid anhydride starch derivative, which may be an OSA-modified starch derivative a release agent in the formation of waterbased adhesive. This document fails to disclose or even suggest the use of OSA alone, or as part of a crosslinked carrier starch, as a component of a waterborne adhesive, in an amount needed to improve the set speed of the adhesive.

Note of the cited Nguyen, Lydzinski, Eden or Figiel patents teach waterborne adhesive containing OSA component (OSA or OSA carrier starch comprising OSA) in the adhesive compositions claimed by applicants. Use of an OSA component in a starch-based adhesive let alone resin emulsion-based adhesive in amounts sufficient to improve set speed is not anticipated by or obvious over the references of record.

Withdrawal of the prior art rejections based on Nguyen et al. (U.S. Patent No. 5,716,441), Lydzinski et al. (U.S. Patent No. 6,280,515), Eden et al. (U.S. Patent No. 6,379,447) and Figiel et al. (U.S. Patent No. 6,387,475) is requested.

Favorable and early action is solicited.

Respectfully submitted,



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